Postel

Network Working Group
Request for Comments: 999

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Requests For Comments Summary
Notes: 900-999

Status of this Memo

This RFC is a slightly annotated list of the 100 RFCs from RFC-900 through RFC-999. This is a status report on these RFCs. Distribution of this memo is unlimited.

RFC	Author	Date	Title
999	Westine	Apr 87	Requests For Comments Summary

This memo.

998	Lambert	Mar 87	NETBLT: A Bulk Data Transfer Protocol

This document is a description of, and a specification for, the NETBLT protocol. It is a revision of the specification published in RFC-969. NETBLT (NETwork BLock Transfer) is a transport level protocol intended for the rapid transfer of a large quantity of data between computers. It provides a transfer that is reliable and flow controlled, and is designed to provide maximum throughput over a wide variety of networks. Although NETBLT currently runs on top of the Internet Protocol (IP), it should be able to operate on top of any datagram protocol similar in function to IP. This document is published for discussion and comment, and does not constitute a standard. The proposal may change and certain parts of the protocol have not yet been specified; implementation of this document is therefore not advised. Obsoletes RFC-969.

997	Reynolds	Mar 87	Internet Numbers

This memo is an official status report on the network numbers used in the Internet community. As of 1-Mar-87 the Network Information Center (NIC) at SRI International has assumed responsibility for assignment of Network Numbers and Autonomous System Numbers. This RFC documents the current assignments of these numbers at the time of this transfer of responsibility. Obsoletes RFC-990, 960, 943, 923 and 900.

996 Mills Feb 87 Statistics Server

This RFC specifies a standard for the ARPA Internet community. Hosts and gateways on the DARPA Internet that choose to implement a remote statistics monitoring facility may use this protocol to send statistics data upon request to a monitoring center or debugging host.

995 ANSI Apr 86 End System to Intermediate System Routing Exchange Protocol for use in conjunction with ISO 8473.

This Protocol is one of a set of International Standards produced to facilitate the interconnection of open systems. The set of standards covers the services and protocols required to achieve such interconnection. This Protocol is positioned with respect to other related standards by the layers defined in the Reference Model for Open Systems Interconnection (ISO 7498) and by the structure defined in the Internal Organization of the Network Layer (DIS 8648). In particular, it is a protocol of the Network Layer. This Protocol permits End Systems and Intermediate Systems to exchange configuration and routing information to facilitate the operation of the routing and relaying functions of the Network Layer.

994 ANSI Mar 86 Final Text of DIS 8473, Protocol for Providing the Connectionless Mode Network Service

This Protocol Standard is one of a set of International Standards produced to facilitate the interconnection of open systems. The set of standards covers the services and protocols required to achieve such interconnection. This Protocol Standard is positioned with respect to other related standards by the layers defined in the Reference Model for Open Systems Interconnection (ISO 7498). In particular, it is a protocol of the Network Layer. This Protocol may be used between network-entities in end systems or in Network Layer relay systems (or both). It provides the Connectionless-mode Network Service as defined in Addendum 1 to the Network Service Definition Covering Connectionless-mode Transmission (ISO 8348/AD1).

993 Clark Dec 86 PCMAIL: A Distributed Mail System for Personal Computers

This document is a discussion of the Pcmail workstation-based distributed mail system. It is a revision of the design published in NIC RFC-984. The revision is based on discussion and comment fromm a variety of sources, as well as further research into the design of interactive Pcmail clients and the use of client code on machines other than IBM PCs. As this design may change, implementation of this document is not advised. Obsoletes RFC-984.

992 Birman Nov 86 On Communication Support for Fault-Tolerant Process Groups

This memo describes a collection of multicast communication primitives integrated with a mechanism for handling process failure and recovery. These primitives facilitate the implementation of fault-tolerant process groups, which can be used to provide distributed services in an environment subject to non-malicious crash failures.

991 Reynolds Nov 86 Official ARPA-Internet Protocols

This RFC identifies the documents specifying the official protocols used in the Internet. Comments indicate any revisions or changes planned. This memo is an official status report on the numbers used in protocols in the ARPA-Internet community. Obsoletes RFC-961, 944 and 924.

990 Reynolds Nov 86 Assigned Numbers

This Network Working Group Request for Comments documents the currently assigned values from several series of numbers used in network protocol implementations. This memo is an official status report on the numbers used in protocols in the ARPA-Internet community. See RFC-997. Obsoletes RFC-960, 943, 923 and 900.

989 Linn Feb 87 Privacy Enhancement for Internet Electronic Mail: Part I: Message Encipherment and Authentication Procedures

This RFC suggests a proposed protocol for the Internet community and requests discussion and suggestions for improvements. This RFC is the outgrowth of a series of IAB Privacy Task Force meetings and of internal working papers distributed for those meetings. This RFC defines message encipherment and authentication procedures, as the initial phase of an effort to provide privacy enhancement services for electronic mail transfer in the Internet. It is intended that the procedures defined here be compatible with a wide range of key management approaches, including both conventional (symmetric) and public-key (asymmetric) approaches for encryption of data encrypting keys. Use of conventional cryptography for message text encryption and/or authentication is anticipated.

988 Deering Jul 86 Host Extensions for IP Multicasting

This memo specifies the extensions required of a host implementation of the Internet Protocol (IP) to support internetwork multicasting. This specification supersedes that given in RFC-966, and constitutes a proposed protocol standard for IP multicasting in the ARPA-Internet. The reader is directed to RFC-966 for a discussion of the motivation and rationale behind the multicasting extension specified here.

987 Kille Jun 86 Mapping between X.400 and RFC-822

The X.400 series protocols have been defined by CCITT to provide an Interpersonal Messaging Service (IPMS), making use of a store and forward Message Transfer Service. It is expected that this standard will be implemented very widely. This document describes a set of mappings which will enable interworking between systems operating the X.400 protocols and systems using RFC-822 mail protocol or protocols derived from RFC-822. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

986 Callon Jun 86 Working Draft -- Guidelines for the Use of Internet-IP addressing in the ISO Connectionless-Mode Network Protocol

This RFC suggests a method to allow the existing IP addressing, including the IP protocol field, to be used for the ISO Connectionless Network Protocol (CLNP). This is a draft solution to one of the problems inherent in the use of "ISO-grams" in the DOD Internet. Related issues will be discussed in subsequent RFCs. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

985 Mills May 86 Requirements for Internet Gateways

This RFC summarizes the requirements for gateways to be used on networks supporting the DARPA Internet protocols. While it applies specifically to National Science Foundation research programs, the requirements are stated in a general context and are believed applicable throughout the Internet community. The purpose of this document is to present guidance for vendors offering products that might be used or adapted for use in an Internet application. It enumerates the protocols required and gives references to RFCs and other documents describing the current specification.

984 Clark May 86 PCMAIL: A Distributed Mail System for Personal Computers

This document is a preliminary discussion of the design of a personal-computer-based distributed mail system. Pcmail is a distributed mail system that provides mail service to an arbitrary number of users, each of which owns one or more personal computers (PCs). The system is divided into two halves. The first consists of a single entity called the "repository". The repository is a storage center for incoming mail. Mail for a Pcmail user can arrive externally from the Internet or internally from other repository users. The repository also maintains a stable copy of each user's mail state. The repository is therefore typically a computer with a large amount of disk storage. It is published for discussion and comment, and does not constitute a standard. As the proposal may change, implementation of this document is not advised. See RFC-993.

983 Cass Apr 86 ISO Transport Services on Top of the TCP

This memo describes a proposed protocol standard for the ARPA Internet community. The CCITT and the ISO have defined various session, presentation, and application recommendations which have been adopted by the international community and numerous vendors. To the largest extent possible, it is desirable to offer these higher level services directly in the ARPA Internet, without disrupting existing facilities. This permits users to develop expertise with ISO and CCITT applications which previously were not available in the ARPA Internet. The intention is that hosts in the ARPA-Internet that choose to implement ISO TSAP services on top of the TCP be expected to adopt and implement this standard. Suggestions for improvement are encouraged.

982 ANSI Apr 86 Guidelines for the Specification of the Structure of the Domain Specific Part (DSP) of the ISO Standard NSAP Address

This RFC is a draft working document of the ANSI "Guidelines for the Specification of the Structure of the Domain Specific Part (DSP) of the ISO Standard NSAP Address". It provides guidance to private address administration authorities on preferred formats and semantics for the Domain Specific Part (DSP) of an NSAP address. This RFC specifies the way in which the DSP may be constructed so as to facilitate efficient address assignment. This RFC is for informational purposes only and its distribution is unlimited and does not specify a standard of the ARPA-Internet.

981 Mills Mar 86 An Experimental Multiple-Path Routing Algorithm

This document introduces wiretap algorithms, a class of experimental, multiple routing algorithms that compute quasi-optimum routes for stations sharing a packet-radio broadcast channel. The primary route (a minimum-distance path), and additional paths ordered by distance, which serve as alternate routes should the primary route fail, are computed. This prototype is presented as an example of a class of routing algorithms and data-base management techniques that may find wider application in the Internet community. Discussions and suggestions for improvements are welcomed.

980 Jacobsen Mar 86 Protocol Document Order Information

This RFC indicates how to obtain various protocol documents used in the DARPA research community. Included is an overview of the new 1985 DDN Protocol Handbook and available sources for obtaining related documents (such as DOD, ISO, and CCITT).

979 Malis Mar 86 PSN End-to-End Functional Specification

This memo is an updated version of BBN Report 5775, "End-to-End Functional Specification and describes important changes to the functionality of the interface between a Host and the PSN, and should be carefully reviewed by anyone involved in supporting a host on either the ARPANET or MILNET". The new End-to-End protocol (EE) is being developed in order to correct a number of deficiencies in the old EE, to improve its performance and overall throughput, and to better equip the Packet Switch Node (PSN, also known as the IMP) to support its current and anticipated host population.

978 Reynolds Feb 86 Voice File Interchange Protocol (VFIP)

The purpose of the Voice File Interchange Protocol (VFIP) is to permit the interchange of various types of speech files between different systems in the ARPA-Internet community. Suggestions for improvement are encouraged.

977 Kantor Feb 86 Network News Transfer Protocol

NNTP specifies a protocol for the distribution, inquiry, retrieval, and posting of news articles using a reliable stream-based transmission of news among the ARPA-Internet community. NNTP is designed so that news articles are stored in a central database allowing a subscriber to select only those items he wishes to read. Indexing, cross-referencing, and expiration of aged messages are also provided. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

976 Horton Feb 86 UUCP Mail Interchange Format Standard

This document defines the standard format for the transmission of mail messages between computers in the UUCP Project. It does not however, address the format for storage of messages on one machine, nor the lower level transport mechanisms used to get the date from one machine to the next. It represents a standard for conformance by hosts in the UUCP zone.

975 Mills Feb 86 Autonomous Confederations

This RFC proposes enhancements to the Exterior Gateway Protocol (EGP) to support a simple, multiple-level routing capability while preserving the robustness features of the current EGP model. The enhancements generalize the concept of core system to include multiple communities of autonomous systems, called autonomous confederations. Discussion and suggestions for improvement are requested.

974 Partridge Jan 86 Mail Routing and the Domain System

This RFC presents a description of how mail systems on the Internet are expected to route messages based on information from the domain system. This involves a discussion of how mailers interpret MX RRs, which are used for message routing.

973 Mockapetris Jan 86 Domain System Changes and Observations

This RFC documents updates to Domain Name System specifications RFC-882 and RFC-883, suggests some operational guidelines, and discusses some experiences and problem areas in the present system.

972 Wancho Jan 86 Password Generator Protocol

This RFC specifies a standard for the ARPA Internet community. The Password Generator Service (PWDGEN) provides a set of six randomly generated eight-character "words" with a reasonable level of pronounceability, using a multi-level algorithm. Hosts on the ARPA Internet that choose to implement a password generator service are expected to adopt and implement this standard.

971 DeSchon Dec 85 A Survey of Data Representation Standards

This RFC is a comparison of several data representation standards that are currently in use. The standards discussed are the CCITT X.409 recommendation, the NBS Computer Based Message System (CBMS) standard, DARPA Multimedia Mail system, the Courier remote procedure call protocol, and the SUN Remote Procedure Call package. No proposals in this document are intended as standards for the ARPA-Internet at this time. Rather, it is hoped that a general consensus will emerge as to the appropriate approach to a data representation standard, leading eventually to the adoption of an ARPA-Internet standard.

970 Nagle Dec 85 On Packet Switches With Infinite Storage

The purpose of this RFC is to focus discussion on a particular problem in the ARPA-Internet and possible methods of solution. Most prior work on congestion in datagram systems focuses on buffer management. In this memo the case of a packet switch with infinite storage is considered. Such a packet switch can never run out of buffers. It can, however, still become congested. The meaning of congestion in an infinite-storage system is explored. An unexpected result is found that shows a datagram network with infinite storage, first-in-first-out queuing, at least two packet switches, and a finite packet lifetime will, under overload, drop all packets. By attacking the problem of congestion for the infinite-storage case, new solutions applicable to switches with finite storage may be found. No proposed solutions this document are intended as standards for the ARPA-Internet at this time.

969 Clark Dec 85 NETBLT: A Bulk Data Transfer Protocol

This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements. This is a preliminary discussion of the Network Block Transfer (NETBLT) protocol. NETBLT is intended for the rapid transfer of a large quantity of data between computers. It provides a transfer that is reliable and flow controlled, and is structured to provide maximum throughput over a wide variety of networks. This description is published for discussion and comment, and does not constitute a standard. As the proposal may change, implementation of this document is not advised. See RFC-998.

968 Cerf Dec 85 'Twas the Night Before Start-up'

This memo discusses problems that arise and debugging techniques used in bringing a new network into operation.

967 Padlipsky Dec 85 All Victims Together

This RFC proposes a new set of RFCs on how the networking code is integrated with various operating systems. It appears that this topic has not received enough exposure in the literature. Comments and suggestions are encouraged.

966 Deering Dec 85 A Multicast Extension to the Internet Protocol

This RFC defines a model of service for Internet multicasting and proposes an extension to the Internet Protocol (IP) to support such a multicast service. Discussion and suggestions for improvements are requested. See RFC-988.

965 Aguilar Dec 85 A Format for a Graphical Communication Protocol

This RFC describes the requirements for a graphical format on which to base a graphical on-line communication protocol, and proposes an Interactive Graphical Communication Format using the GKSM session metafile. We hope this contribution will encourage the discussion of multimedia data exchange and the proposal of solutions.

964 Sidhu Nov 85 Some Problems with the Specification of the Military Standard Transmission Control Protocol

The purpose of this RFC is to provide helpful information on the Military Standard Transmission Control Protocol (MIL-STD-1778) so that one can obtain a reliable implementation of this protocol standard. This note points out three errors with this specification. This note also proposes solutions to these problems.

963 Sidhu Nov 85 Some Problems with the Specification of the Military Standard Internet Protocol

The purpose of this RFC is to provide helpful information on the Military Standard Internet Protocol (MIL-STD-1777) so that one can obtain a reliable implementation of this protocol. This paper points out several problems in this specification. This note also proposes solutions to these problems.

962 Padlipsky Nov 85 TCP-4 Prime

This memo is in response to Bob Braden's call for a transaction oriented protocol (RFC-955), and continues the discussion of a possible transaction oriented transport protocol. This memo does not propose a standard.

961 Reynolds Dec 85 Official ARPA-Internet Protocols

This memo identifies the documents specifying the official protocols used in the Internet, and comments on any revisions or changes planned. This edition of the Official Protocols updates and obsoletes RFC-944. This memo is an official status report on the protocols used in the ARPA-Internet community. See RFC-991.

960 Reynolds Dec 85 Assigned Numbers

This memo documents the currently assigned values from several series of numbers used in network protocol implementations. This edition of Assigned Numbers updates and obsoletes RFC-943. This memo is an official status report on the numbers used in protocols in the ARPA-Internet community. See RFC-990 and 997.

959 Postel Oct 85 File Transfer Protocol (FTP)

This memo is the official specification of the File Transfer Protocol (FTP) for the DARPA Internet community. The primary intent is to clarify and correct the documentation of the FTP specification, not to change the protocol. The following new optional commands are included in this edition of the specification: Change to Parent Directory (CDUP), Structure Mount (SMNT), Store Unique (STOU), Remove Directory (RMD), Make Directory (MKD), Print Directory (PWD), and System (SYST). Note that this specification is compatible with the previous edition.

958 Mills Sep 85 Network Time Protocol (NTP)

This document describes the Network Time Protocol (NTP), a protocol for synchronizing a set of network clocks using a set of distributed clients and servers. NTP is built on the User Datagram Protocol (UDP), which provides a connectionless transport mechanism. It is evolved from the Time Protocol and the ICMP Timestamp message and is a suitable replacement for both. This RFC suggests a proposed protocol for the

ARPA-Internet community, and requests discussion and suggestions for improvements.

957 Mills Sep 85 Experiments in Network Clock Synchronization

This RFC discusses some experiments in clock synchronization in the ARPA-Internet community, and requests discussion and suggestions for improvements. One of the services frequently neglected in computer network design is a high-quality, time-of-day clock capable of generating accurate timestamps with small errors compared to one-way network delays. Such a service would be useful for tracing the progress of complex transactions, synchronizing cached data bases, monitoring network performance and isolating problems. In this memo one such clock service design will be described and its performance assessed. This design has been incorporated as an integral part of the network routing and control protocols of the Distributed Computer Network (DCnet) architecture.

956 Mills Sep 85 Algorithms for Synchronizing Network Clocks

This RFC discussed clock synchronization algorithms for the ARPA-Internet community, and requests discussion and suggestions for improvements. The recent interest within the Internet community in determining accurate time from a set of mutually suspicious network clocks has been prompted by several occasions in which errors were found in usually reliable, accurate clock servers after thunderstorms which disrupted their power supply. To these sources of error should be added those due to malfunctioning hardware, defective software and operator mistakes, as well as random errors in the mechanism used to set and synchronize clocks. This report suggests a stochastic model and algorithms for computing a good estimator from time-offset samples measured between clocks connected via network links. Included in this report are descriptions of certain experiments which give an indication of the effectiveness of the algorithms.

955 Braden Sep 85 Towards a Transport Service for Transaction Processing Applications

The DoD Internet protocol suite includes two alternative transport service protocols, TCP and UDP, which provide virtual circuit and datagram service, respectively. These two protocols represent points in the space of possible transport service attributes which are quite "far apart". We want to examine an important class of applications, those which perform what is often called "transaction processing". We will see that the communication needs for these applications fall into the gap "between" TCP and UDP -- neither protocol is very appropriate. This RFC is concerned with the possible design of one or more new protocols for the ARPA-Internet, to support kinds of applications which are not well supported at present. The RFC is intended to spur

discussion in the Internet research community towards the development of new protocols and/or concepts, in order to meet these unmet application requirements. It does not represent a standard, nor even a concrete protocol proposal.

954 Harrenstien Oct 85 NICNAME/WHOIS

This RFC is the official specification of the NICNAME/WHOIS protocol. This memo describes the protocol and the service. This is an update of RFC-812.

953 Harrenstien Oct 85 Hostname Server

This RFC is the official specification of the Hostname Server Protocol. This edition of the specification includes minor revisions to RFC-811 which brings it up to date.

952 Harrenstien Oct 85 DoD Internet Host Table Specification

This RFC is the official specification of the format of the Internet Host Table. This edition of the specification includes minor revisions to RFC-810 which brings it up to date.

951 Croft Sep 85 Bootstrap Protocol (BOOTP)

This RFC describes an IP/UDP bootstrap protocol (BOOTP) which allows a diskless client machine to discover its own IP address, the address of a server host, and the name of a file to be loaded into memory and executed. The bootstrap operation can be thought of as consisting of TWO PHASES. This RFC describes the first phase, which could be labeled `address determination and bootfile selection'. After this address and filename information is obtained, control passes to the second phase of the bootstrap where a file transfer occurs. The file transfer will typically use the TFTP protocol, since it is intended that both phases reside in PROM on the client. However BOOTP could also work with other protocols such as SFTP or FTP. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

950 Mogul Aug 85 Internet Standard Subnetting Procedure

This memo discusses the utility of "subnets" of Internet networks, which are logically visible sub-sections of a single Internet network. For administrative or technical reasons, many organizations have chosen to divide one Internet network into several subnets, instead of acquiring a set of Internet network numbers. This memo specifies procedures for the use of subnets. These procedures are for hosts (e.g., workstations). The procedures used in and between subnet gateways are not fully described. Important motivation and background information for a subnetting standard is provided in RFC-940. This RFC specifies a protocol for the ARPA-Internet community. If subnetting is implemented it is strongly recommended that these procedures be followed.

949 Padlipsky Jul 85 FTP Unique-Named Store Command

There are various contexts in which it would be desirable to have an FTP command that had the effect of the present STOR but rather than requiring the sender to specify a file name istead caused the resultant file to have a unique name relative to the current directory. This RFC proposes an extension to the File Transfer Protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements. See RFC-959.

948 Winston Jun 85 Two Methods for the Transmission of IP Datagrams Over IEEE 802.3 Networks

This RFC describes two methods of encapsulating Internet Protocol (IP) datagrams on an IEEE 802.3 network. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

947 Lebowitz Jun 85 Multi-Network Broadcasting Within the Internet

This RFC describes the extension of a network's broadcast domain to include more than one physical network through the use of a broadcast packet repeater.

946 Nedved May 85 Telnet Terminal Location Number Option

Many systems provide a mechanism for finding out where a user is logged in from usually including information about telephone extension and office occupants names. The information is useful for physically locating people and/or calling them on the phone. In 1982 CMU designed and implemented a terminal location database and modified existing network software to handle a 64-bit number called the Terminal Location Number (or TTYLOC). It now seems appropriate to incorporate this mechanism into the TCP-based network protocol family. The mechanism is not viewed as a replacement for the Terminal Location Telnet Option (SEND-LOCATION) but as a shorthand mechansim for communicating terminal location information between hosts in a localized community. This RFC proposes a new option for Telnet for the ARPA-Internet community, and requests discussion and suggestions for improvements.

945 Postel May 85 A DoD Statement on the NRC Report

In May 1983 the National Research Council (NRC) was asked jointly by DoD and NBS to study the issues and recommend a course of action. The final report of the NRC committee was published in February 1985 (see RFC-942). The enclosed letter is from Donald C. Latham (ASDC3I) to DCA transmitting the NRC report and requesting specific actions relative to the recommendations of the report. This RFC reproduces a letter from the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASDC3I) to the Director of the Defense Communications Agency (DCA). This letter is distributed for information only.

944 Reynolds Apr 85 Official ARPA-Internet Protocols

This RFC identifies the documents specifying the official protocols used in the Internet. This edition of Official ARPA-Internet Protocols obsoletes RFC-924 and earlier editions. This RFC will be updated periodically, and current information can be obtained from Joyce Reynolds. This memo is an official status report on the protocols used in the ARPA-Internet community. See RFC-991.

943 Reynolds Apr 85 Assigned Network Numbers

This Network Working Group Request for Comments documents the currently assigned values from several series of numbers used in network protocol implementations. This RFC will be updated periodically, and in any case current information can be obtained from Joyce Reynolds. The assignment of numbers is also handled by Joyce. If you are developing a protocol or application that will require the use of a link, socket, port, protocol, network number, etc., please contact Joyce to receive a number assignment. This memo is an official status report on the numbers used in protocols in the ARPA-Internet community. See RFC-990 and 997.

942 NRC Feb 85 Transport Protocols for Department of Defense Data Networks

This RFC reproduces the National Research Council report resulting from a study of the DoD Internet Protocol (IP) and Transmission Control Protocol (TCP) in comparison with the ISO Internet Protocol (ISO-IP) and Transport Protocol level 4 (TP-4).

941 ISO Apr 85 Addendum to the Network Service Definition Covering Network Layer Addressing

This Addendum to the Network Service Definition Standard, ISO 8348, defines the abstract syntax and semantics of the Network Address (Network Service Access Point Address). The Network Address defined in this Addendum is the address that appears in the primitives of the connection-mode Network Service as the calling address, called address, and responding address parameters, and in the primitives of the connectionless-mode Network Service as the source address and destination address parameters. This document is distributed as an RFC for information only. It does not specify a standard for the ARPA-Internet.

940 GADS Apr 85 Toward an Internet Standard Scheme for Subnetting

Several sites now contain a complex of local links connected to the Internet via a gateway. The details of the internal connectivity are of little interest to the rest of the Internet. One way of organizing these local complexes of links is to use the same strategy as the Internet uses to organize networks, that is, to declare each link to be an entity (like a network) and to interconnect the links with devices that perform routing functions (like gateways). This general scheme is called subnetting, the individual links are called subnets, and the connecting devices are called subgateways (or bridges, or gateways). This RFC discusses standardizing the protocol used in subnetted environments in the ARPA-Internet.

939 NRC Feb 85 Executive Summary of the NRC Report on Transport Protocols for Department of Defense Data Networks

This RFC reproduces the material from the "front pages" of the National Research Council report resulting from a study of the DOD Internet Protocol (IP) and Transmission Control Protocol (TCP) in comparison with the ISO Internet Protocol (ISO-IP) and Transport Protocol level 4 (TP-4). The point of this RFC is to make the text of the Executive Summary widely available in a timely way. The order of presentation has been altered, and the pagination changed. This RFC is distributed for information only. This RFC does not establish any policy for the DARPA research community or the DDN operational community.

938 Miller Feb 85 Internet Reliable Transaction Protocol Functional and Interface Specification

This RFC is being distributed to members of the DARPA research community in order to solicit their reactions to the proposals contained in it. While the issues discussed may not be directly relevant to the research problems of the DARPA community, they may be interesting to a number of researchers and implementors. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

937 Reynolds Feb 85 Post Office Protocol - Version 2

This RFC suggests a simple method for workstations to dynamically access mail from a mailbox server. This RFC specifies a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvement. This memo is a revision of RFC-918.

936 Karels Feb 85 Another Internet Subnet Addressing Scheme

There have been several proposals for schemes to allow the use of a single Internet network number to refer to a collection of physical networks under common administration which are reachable from the rest of the Internet by a common route. Such schemes allow a simplified view of an otherwise complicated topology from hosts and gateways outside of this collection. They allow the complexity of the number and type of these networks, and routing to them, to be localized. Additions and changes in configuration thus cause no detectable change, and no interruption of service, due to slow propagation of routing and other information outside of the local environment. These schemes also simplify the administration of the network, as changes do not require allocation of new network numbers for each new cable installed. This proposal discusses an alternative scheme, one that has been in use at the University of California, Berkeley since April 1984. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

935 Robinson Jan 85 Reliable Link Layer Protocols

This RFC discusses protocols proposed recently in RFCs 914 and 916, and suggests a proposed protocol that could meet the same needs addressed in those memos. The stated need is reliable communication between two programs over a full-duplex, point-to-point communication link, and in particular the RFCs address the need for such communication over an asynchronous link at relatively low speeds. The suggested protocol uses the methods of existing national and international data link layer standards. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

934 Rose Jan 85 Proposed Standard for Message Encapsulation

This memo concerns itself with message forwarding. Forwarding can be thought of as encapsulating one or more messages inside another. Although this is useful for transfer of past correspondence to new recipients, without a decapsulation process (which this memo terms "bursting"), the forwarded messages are of little use to the recipients because they can not be distributed, forwarded, replied-to, or otherwise processed as separate individual messages. In order to burst a message it is necessary to know how the component messages were encapsulated in the draft. At present there is no unambiguous standard for interest group digests. This RFC proposes a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

933 Silverman Jan 85 Output Marking Telnet Option

This proposed option would allow a Server-Telnet to send a banner to a User-Telnet so that this banner would be displayed on the workstation screen independently of the application software running in the Server-Telnet.

932 Clark Jan 85 A Subnetwork Addressing Scheme

This RFC proposes an alternative addressing scheme for subnets which, in most cases, requires no modification to host software whatsoever. The drawbacks of this scheme are that the total number of subnets in any one network are limited, and that modification is required to all gateways.

931 StJohns Jan 85 Authentication Server

This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements. This is the second draft of this proposal (superseding RFC-912) and incorporates a more formal description of the syntax for the request and response dialog, as well as a change to specify the type of user identification returned.

930 Solomon Jan 85 Telnet Terminal Type Option

This RFC specifies a standard for the ARPA Internet community. Hosts on the ARPA Internet that exchange terminal type information within the Telnet protocol are expected to adopt and implement this standard. This standard supersedes RFC-884. The only change is to specify that the TERMINAL-TYPE IS sub-negotiation should be sent only in response to the TERMINAL-TYPE SEND sub-negotiation.

929 Lilienkamp Dec 84 Proposed Host-Front End Protocol

The Host-Front End Protocol introduced in RFC-928 is described in detail in this memo. The first order of business is to declare that THIS IS A PROPOSAL, NOT A FINAL STANDARD, and the second order of business is to request that any readers of these documents who are able to do test implementations (a) do so and (b) coordinate their efforts with the author. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

928 Padlipsky Dec 84 Introduction to Proposed DOD Standard H-FP

The broad outline of the Host-Front End Protocol introduced here and described in RFC-929 is the result of the deliberations of a number of experienced H-FP designers, who sat as a committee of the DoD Protocol Standards Technical Panel. It is the intent of the designers that the protocol be subjected to multiple test implementations and probable iteration before being agreed upon as any sort of "standard".

Therefore, the first order of business is to declare that THIS IS A PROPOSAL, NOT A FINAL STANDARD, and the second order of business is to request that any readers of these documents who are able to do test implementations (a) do so and (b) coordinate their efforts with the author. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

927 Anderson Dec 84 TACACS User Identification Telnet Option

The following is the description of a TELNET option designed to facilitate double login avoidance. It is intended primarily for TAC connections to target hosts on behalf of TAC users, but it can be used between any two consenting hosts. For example, all hosts at one site (e.g., BBN) can use this option to avoid double login when TELNETing to one another. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

926 ISO Dec 84 Protocol for Providing the Connectionless-Mode Network Services

This note is the draft ISO protocol roughly similar to the DOD Internet Protocol. This document has been prepared by retyping the text of ISO DIS 8473 of May 1984, which is currently undergoing voting within ISO as a Draft International Standard (DIS). This document is distributred as an RFC for information only. It does not specify a standard for the ARPA-Internet.

925 Postel Oct 84 Multi-LAN Address Resolution

The problem of treating a set of local area networks (LANs) as one Internet network has generated some interest and concern. It is inappropriate to give each LAN within an site a distinct Internet network number. It is desirable to hide the details of the interconnections between the LANs within an site from people, gateways, and hosts outside the site. The question arises on how to best do this, and even how to do it at all. In RFC-917 Jeffery Mogul makes a case for the use of "explicit subnets" in a multi-LAN environment. The explicit subnet scheme is a call to recursively apply the mechanisms the Internet uses to manage networks to the problem of managing LANs within one network. In this note I urge another approach: the use of "transparent subnets" supported by a multi-LAN extension of the Address Resolution Protocol. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

924 Reynolds Oct 84 Official ARPA-Internet Protocols

This RFC identifies the documents specifying the official protocols used in the Internet. This edition of Official ARPA-Internet Protocols obsoletes RFC-900 and earlier editions. This memo is an official status report on the protocols used in the ARPA-Internet community. See RFC-991.

923 Reynolds Oct 84 Assigned Numbers

This RFC documents the currently assigned values from several series of numbers used in network protocol implementations. This edition of Assigned Numbers obsoletes RFC-900 and earlier editions. This memo is an official status report on the numbers used in protocols in the ARPA-Internet community. See RFC-990, and 997.

922 Mogul Oct 84 Broadcasting Internet Datagrams in the Presence of Subnets

We propose simple rules for broadcasting Internet datagrams on local networks that support broadcast, for addressing broadcasts, and for how gateways should handle them. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

921 Postel Oct 84 Domain Name System Implementation Schedule - Revised

This memo is a policy statement on the implementation of the Domain Style Naming System in the Internet. This memo is an update of RFC-881, and RFC-897. This is an official policy statement of the IAB and the DARPA. The intent of this memo is to detail the schedule for the implementation for the Domain Style Naming System. The explanation of how this system works is to be found in the references.

920 Postel Oct 84 Domain Requirements

This memo states the requirements on establishing a Domain, and introduces the limited set of top level domains. This memo is a policy statement on the requirements of establishing a new domain in the ARPA-Internet and the DARPA research community. This is an official policy statement of the IAB and the DARPA.

919 Mogul Oct 84 Broadcasting Internet Datagrams

This RFC proposes simple rules for broadcasting Internet datagrams on local networks that support broadcast, for addressing broadcasts, and for how gateways should handle them. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

918 Reynolds Oct 84 Post Office Protocol (POP)

This RFC suggests a simple method for workstations to dynamically access mail from a mailbox server. The intent of the Post Office Protocol (POP) is to allow a user's workstation to access mail from a mailbox server. It is expected that mail will be posted from the workstation to the mailbox server via the Simple Mail Transfer Protocol (SMTP). This RFC specifies a proposed protocol for the ARPA-Internet community, and

requests discussion and suggestions for improvement. The status of this protocol is experimental, and this protocol is dependent upon TCP.

917 Mogul Oct 84 Internet Subnets

This memo discusses subnets and proposes procedures for the use of subnets, including approaches to solving the problems that arise, particularly that of routing. A subnet of an Internet network is a logically visible sub-section of a single Internet network. For administrative or technical reasons, many organizations have chosen to divide one Internet network into several subnets, instead of acquiring a set of Internet network numbers. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

916 Finn Oct 84 Reliable Asynchronous Transfer Protocol (RATP)

This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements. This paper proposes and specifies a protocol which allows two programs to reliably communicate over a communication link. It ensures that the data entering one end of the link if received arrives at the other end intact and unaltered. The protocol, named RATP, is designed to operate over a full duplex point-to-point connection. It contains some features which tailor it to the RS-232 links now in common use.

915 Elvy Dec 84 Network Mail Path Service

This RFC proposed a new service for the ARPA-Internet community and requests discussion and suggestions for improvements. The network mail path service fills the current need of people to determine mailbox addresses for hosts that are not part of the ARPA-Internet but can be reached by one or more relay hosts that have Unix to Unix Copy (UUCP) mail, CSNET mail, MAILNET mail, BITNET mail, etc. Anyone can use the service if they have TCP/TELENET to one of the hosts with a mail path server.

914 Farber Sep 84 A Thinwire Protocol

This RFC focuses discussion on the particular problems in the ARPA-Internet of low speed network interconnection with personal computers, and possible methods of solution. None of the proposed solutions in this document are intended as standards for the ARPA-Internet. Rather, it is hoped that a general consensus will emerge as to the appropriate solution to the problems, leading eventually to the adoption of standards.

913 Lottor Sep 84 Simple File Transfer Protocol

This memo describes a proposed Simple File Transfer Protocol (SFTP). It fills the need of people wanting a protocol that is more useful than TFTP but easier to implement (and less powerful) than FTP. SFTP supports user access control, file transfers, directory listing, directory changing, file renaming and deleting. Discussion of this proposal is encouraged, and suggestions for improvements may be sent to the author.

912 StJohns Sep 84 Authentication Service

This memo describes a proposed authentication protocol for verifying the identity of a user of a TCP connection. Given a TCP port number pair, it returns a character string which identifies the owner of that connection on the server's system. Suggested uses include automatic identification and verification of a user during an FTP session, additional verification of a TAC dial up user, and access verification for a generalized network file server.

911 Kirton Aug 84 EGP Gateway under Berkeley Unix 4.2

This memo describes an implementation of the Exterior Gateway Protocol (EGP) (in that sense it is a status report). The memo also discusses some possible extentions and some design issues (in that sense it is an invitation for further discussion).

910 Forsdick Aug 84 Multimedia Mail Meeting Notes

This memo is a report on a meeting about the experimental multimedia mail system (and in a sense a status report on that experiment). The meeting was held at Bolt Beranek and Newman on 23-24 July 1984 to discuss recent progress by groups who are building multimedia mail systems and to discuss a variety of issues related to the further development of multimedia systems. Representatives were present from BBN, ISI, SRI and Linkabit.

909 Welles Jul 84 Loader Debugger Protocol

The Loader Debugger Protocol (LDP) is an application layer protocol for loading, dumping, and debugging target machines from hosts in a network environment. This RFC specifies a proposed protocol for the ARPA-Internet and DARPA research community, and requests discussion and suggestions for improvemts.

908 Velten Jul 84 Reliable Data Protocol

The Reliable Data Protocol (RDP) is designed to provide a reliable data transport service for packet-based applications. This RFC specifies a proposed protocol for the ARPA-Internet and DARPA research community, and requests discussion and suggestions for improvemts.

907 Storch Jul 84 Host Access Protocol Specification

This document specifies the Host Access Protocol (HAP). Although HAP was originally designed as the network-access level protocol for the DARPA/DCA sponsored Wideband Packet Satellite Network, it is intended that it evolve into a standard interface SATNET and TACNET (aka MATNET) as well as the Wideband Network. HAP is an experimental protocol, and will undergo further revision as new capabilities are added and/or different satellite networks are suported. Implementations of HAP should be performed in coordination with satellite network development and operations personnel.

906 Finlayson Jun 84 Bootstrap Loading Using TFTP

It is often convenient to be able to bootstrap a computer system from a communications network. This RFC proposes the use of the IP TFTP protocol for bootstrap loading in this case.

905 ISO Apr 84 ISO Transport Protocol Specification (ISO DP 8073)

This is the current specification of the ISO Transport Protocol. This document is the text of ISO/TC97/SC16/N1576 as corrected by ISO/TC97/SC16/N1695. This is the specification currently being voted on in ISO as a Draft International Standard (DIS). This document is distributed as an RFC for your information only, it does not specify a standard for the ARPA-Internet or DARPA research community. Our thanks to Alex McKenzie of BBN for making this online version available. Please note the size of this document, the file contains 258,729 characters.

904 Mills Apr 84 Exterior Gateway Protocol Formal Specification

RFC-904 is the specification of the Exterior Gateway Protocol (EGP). This memo updates portions of RFC-888 and RFC-827. This RFC specifies an official protocol of the DARPA community for use between gateways of different autonomous systems in the ARPA-Internet.

903 Finlayson Jun 84 A Reverse Address Resolution Protocol

This RFC suggests a method for workstations to dynamically find their protocol address (e.g., their Internet Address), when they know only their hardware address (e.g., their attached physical network address). This RFC specifies a proposed protocol for the ARPA Internet community, and requests discussion and suggestions for improvements.

902 Postel Jul 84 ARPA-Internet Protocol Policy

The purpose of this memo is to explain how protocol standards are adopted for the ARPA-Internet and the DARPA research community. There are three important aspects to be discussed: the process, the authority, and the complex relationship between the DARPA community and the DDN community. This memo is a policy statement on how protocols become official standards for the ARPA-Internet and the DARPA research community. This is an official policy statement of the ICCB and the DARPA.

901 Reynolds Jun 84 Official ARPA-Internet Protocols

This RFC identifies the documents specifying the official protocols used in the ARPA-Internet. Annotations identify any revisions or changes planned. This memo is an official status report on the protocols used in the DARPA research community. See RFC-991.

900 Reynolds Jun 84 Assigned Numbers

This RFC specifies parameter values use in the Internet family of protocols, such as network numbers, well known ports, protocol types, and version numbers. This memo is an official status report on the protocol parameters used in the Internet protocol system. See RFC-990 and 997.